

WHAT IS CLAIMED IS:

1. A method of cleaning a polishing pad surface subsequent to chemical-mechanical polishing (CMP) a wafer surface containing copper (Cu) or a Cu-based alloy, the method comprising applying to the polishing pad surface a cleaning composition comprising:

- 5 about 0.1 to about 3.0 wt.% of at least one organic compound containing one or more amine or amide groups;
 an acid or a base in an amount such that the composition has a pH of about 5.0 to about 12.0; and
 water.

2. The method according to claim 1, wherein the composition is a solution comprising;

- ethylenediamine;
 an acid selected from the group consisting of phosphoric acid, acetic acid
 5 and sulfuric acid, or a base selected from the group consisting of potassium hydroxide, sodium hydroxide and ammonium hydroxide; and
 the remainder deionized water.

3. The method according to claim 1, wherein the composition is a solution consisting essentially of the organic compound, the acid or base and deionized water.

4. The method according to claim 1, wherein the composition is a solution having a pH of about 5.0 to about 12.0.

5. The method according to claim 1, wherein:
 the organic compound forms at least one complex with Cu and/or Cu-containing by-products generated during CMP; and
 the at least one complex is (are) dissolved in the deionized water.

6. The method according to claim 4, comprising applying the solution to a rotating polishing pad at a flow rate of about 100 to about 600 ml/min.

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- (e) conducting CMP on a second wafer; and
- (f) repeating steps (b) through (e).

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13. The method according to claim 12, wherein the composition is a solution comprising:

ethylenediamine;

an acid selected from the group consisting of phosphoric acid, acetic acid

5 and sulfuric acid, or a base selected from the group consisting of potassium hydroxide, sodium hydroxide and ammonium hydroxide; and

the remainder deionized water.

14. The method according to claim 12, wherein the composition is a solution consisting essentially of the organic compound, the acid or base and deionized water.

15. The method according to claim 12, wherein the composition is a solution having a pH of about 5.0 to about 12.0.

16. The method according to claim 12, wherein;

Cu and/or Cu containing by-products are generated during CMP on the surface of the polishing pad;

the at least one organic compound forms at least one complex with the Cu

5 and/or Cu-containing by-products;

the at least one complex is (are) dissolved in the water; and

the cleaning composition containing the dissolved complexes are removed during rinsing.

17. The method according to claim 15, comprising applying the solution to a rotating polishing pad at a flow rate of about 100 to about 600 ml/min.

18. The method according to claim 17, comprising applying the composition to the rotating polishing pad for about 3 seconds to about 20 seconds.

19. An apparatus for conducting chemical-mechanical polishing (CMP) on a wafer surface containing copper (Cu) or a Cu alloy, the apparatus comprising;

a platen;

a polishing pad or sheet mounted on the platen;

5 a first dispenser adapted to dispense a cleaning composition on a working surface on the polishing pad or sheet; and

ethylenediamine;
an acid selected from the group consisting of phosphoric acid, acetic acid
5 and sulfuric acid, or a base selected from the group consisting of potassium hydroxide,
sodium hydroxide and ammonium hydroxide; and
the remainder water.

apply the cleaning composition to a rotating polishing pad at a flow rate of about 100 to about 600 ml/min. for about 3 seconds to about 20 seconds after conducting

rinsing by applying pressurized water to the polishing pad surface for about 2 seconds to about 20 seconds.

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